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(54) Title: MUTANT LUCIFERASE HAVING INCREASED THERMOSTABILITY

(57) Abstract

A protein having luciferase activity and at least 60 % similarity to luciferase from *Photinus pyralis*, *Luciola mingrelica*, *Luciola cruciata* or *Luciola lateralis*, *Hotaria paroula*, *Pyrophorus plagiophthalmus*, *Lampyris noctiluca*, *Pyrocoelia nayako* or *Photinus pennsylvanicus* wherein in the sequence of the enzyme, at least one of (a) the amino acid residue corresponding to residue 214 in *Photinus pyralis* luciferase; (b) the amino acid residue corresponding to residue 232 in *Photinus pyralis* luciferase; (c) the amino acid residue corresponding to residue 295 in *Photinus pyralis* luciferase; (d) the amino acid residue corresponding to acid 14 of *Photinus pyralis* luciferase; (e) the amino acid residue corresponding to amino acid 35 of *Photinus pyralis* luciferase; (f) the amino acid residue corresponding to amino acid residue 105 of *Photinus pyralis* luciferase; (g) the amino acid residue corresponding to amino acid residue 234 of *Photinus pyralis* luciferase; (h) the amino acid residue corresponding to amino acid residue 420 of *Photinus pyralis* luciferase; (i) the amino acid residue corresponding to amino acid residue 310 of *Photinus pyralis* luciferase; is different to the amino acid which appears in the corresponding wild type sequence and wherein the luciferase enzyme has increased thermostability as compared to an enzyme having the amino acid of the corresponding wild-type luciferase at this position.

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